

# Postgraduate Certificate Disciplinary Training in Mathematics





## Postgraduate Certificate Disciplinary Training in Mathematics

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/education/postgraduate-certificate/disciplinary-training-mathematics](http://www.techtitute.com/us/education/postgraduate-certificate/disciplinary-training-mathematics)

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# 01

# Introduction

Geometry, algebra, astronomy and everything related to Mathematics are concepts that sometimes present learning difficulties for students, but that are part of the essential contents in High School Education. That is why teachers of this discipline must take into account the skills that their students have to acquire, as well as the new methodologies that make it possible. In this sense, TECH has designed this program that provides an advanced syllabus on this subject, its history and the application of gamification in the classroom. All this, in a 100% online format and with multimedia resources accessible 24 hours a day, from an electronic device with an Internet connection.



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*Postgraduate Certificate you will be able to develop your Mathematics teaching career with greater success, applying the most effective techniques and methodologies”*

One of the greatest challenges for mathematics teachers is to convey to their students the relevance of this discipline in their daily lives, as well as its cultural and academic value. However, thanks to advances in learning theories and teaching methodologies, these concepts can be approached in the classroom in a much more attractive way.

Given this reality, it is necessary for the teaching professionals to have not only a deep knowledge in this area, but also about the resources and the main concepts in which they should delve into the classroom. For this reason, TECH has developed this 100% online university program in Disciplinary Training in Mathematics.

All this, with a syllabus that provides a theoretical and practical perspective on cognitive and metacognitive processes, mathematical language, history in the mathematics classroom and gamification as a methodological tool. In addition, this program is complemented by a variety of multimedia resources (video summaries of each topic, detailed videos), specialized readings and case studies that can be accessed at any time of the day, from an electronic device with an Internet connection.

In addition, thanks to the Relearning system, based on the repetition of content, students will be able to progress through the program's syllabus, acquiring new concepts in a much more solid way and reducing the long hours of study.

The teaching professional is facing a unique opportunity to progress in the educational field through a convenient and flexible Postgraduate Certificate. And this is because students do not have classes with fixed schedules and can access, whenever they wish, the content hosted on the virtual platform. An exceptional educational option, which is at the academic forefront.

This **Postgraduate Certificate in Disciplinary Training in Mathematics** contains the most complete and up-to-date educational program on the market. Its most outstanding features are:

- ♦ The development of case studies presented by experts in teaching in High School Education
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where self-assessment can be used to improve learning.
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*Take a step further in your professional career as a teacher through a program that will introduce you to the cognitive and metacognitive processes in the learning of Mathematics"*



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*This Postgraduate Certificate will give you the tools you need to enhance the value of Mathematics to your students in High School Education"*

The program includes in its teaching staff professionals from the sector who bring to this program their work experience, in addition to renowned specialists from reference societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that arise during the program. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*This university program will allow you to apply the gamification methodology and make your mathematics lessons more attractive.*

*This is a program that will allow you to access its advanced and innovative content whenever and wherever you want. Enroll now.*



02

# Objectives

This Postgraduate Certificate has been created to provide the most advanced content on Mathematics required by students in High School Education throughout its 6-week duration. In order to achieve this, TECH will provide teaching tools that employ the latest technology applied to teaching as well as an excellent teaching team specialized in the educational field.







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*Multimedia teaching resources, specialized readings and numerous innovative materials are available for you to achieve this knowledge in a much more dynamic way”*



## General Objectives

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- ♦ Introduce students to the world of teaching, from a broad perspective that provides them with the necessary skills for the performance of their work
- ♦ Know the new tools and technologies applied to teaching
- ♦ Show the different options and ways of working in the teacher's workplace
- ♦ Promote the acquisition of communication and knowledge transmission skills and abilities
- ♦ Encourage continuing education for students





## Specific Objectives

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- The Cultural Importance of Mathematics throughout History
- Delve into the conceptual contents of mathematics for the education of High School students
- Gain knowledge about the relation of history as a teaching principle
- Learn the teaching principles that can be derived from history in relation to Mathematics

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*Convey to your students the great values of the culture of Mathematics and its influence throughout history thanks to this university program"*



03

# Course Management

TECH has developed this Postgraduate Certificate thanks to the team of teaching professionals selected specifically for this program. Their knowledge of mathematics and teaching are evident in the syllabus to which students who take this program have access. In addition, their human quality and closeness will allow you to solve any doubts you may have about the content of this syllabus.



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*This Postgraduate Certificate has an excellent teaching team with an excellent professional background in the teaching field at all educational stages”*



## Management



### **Dr. Barboyón Combey, Laura**

- ♦ Teacher of Primary Education and Postgraduate Studies
- ♦ Teacher in Postgraduate University Studies of High School Teacher Formation
- ♦ Teacher of Primary Education in several schools
- ♦ Doctor in Education from the University of Valencia
- ♦ Master's Degree in Psychopedagogy from the University of Valencia
- ♦ Degree in Primary School Education with a major in English Teaching from the Catholic University of Valencia San Vicente Mártir



04

# Structure and Content

Students taking this program will have at their disposal video summaries of each topic, detailed videos, specialized readings and case studies. A set of teaching materials that will allow them to access in a much more attractive way to the most advanced and accurate information about the most relevant contents taught in High School Education. A syllabus that will provide vital learning for the development as a professional in the teaching of Mathematics.



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*A study plan that provides you with a theoretical and practical perspective on the Disciplinary Training in Mathematics required at High School level”*



## Module 1. Complements for the Disciplinary Training of Mathematics

- 1.1. The Formative and Cultural Value of Mathematics in High School Education
  - 1.1.1. The Cultural Importance of Mathematics throughout History
  - 1.1.2. The importance of the Conceptual Contents of Mathematics (its Laws, Principles and Theories) for the Training and Education of the High School Student
  - 1.1.3. Teaching Principles that can be Derived from History
  - 1.1.4. Teaching Principles that can be Derived from the History of Mathematics
- 1.2. Cognitive and Metacognitive Processes in Mathematics
  - 1.2.1. Cognitive Processes in Mathematics.
  - 1.2.2. Metacognitive Processes in Mathematics.
- 1.3. Language and Mathematics.
  - 1.3.1. Language Development and Mathematics
  - 1.3.2. Mathematical Language
- 1.4. Observation, Art and Mathematics
  - 1.4.1. The Golden Number and Proportionality
  - 1.4.2. Other Contributions of Mathematics to Art
  - 1.4.3. Proposal for the Teaching of Geometry through Art
- 1.5. History in the Mathematics Classroom. Ancient Mathematics: Babylon and Egypt
  - 1.5.1. Relevance of History in Science and Mathematics Education
  - 1.5.2. What is the Most Appropriate Role for the Inclusion of the History of Mathematics in Teaching?
  - 1.5.3. Genetic Method of Teaching Mathematics
  - 1.5.4. The First Historical Records of Mathematics
  - 1.5.5. Numbers in Egypt
  - 1.5.6. Numbers in Babylon
- 1.6. Mathematics in Greece
  - 1.6.1. The Greeks: Miletus
  - 1.6.2. Schools of Thought: Thales and the Ionian School, Pythagoras and the Eleatic School
  - 1.6.3. Athens
  - 1.6.4. Euclid
  - 1.6.5. Apollonius
  - 1.6.6. The Alexandrians







- 1.6.7. Archimedes
- 1.6.8. Heron
- 1.6.9. Trigonometry
- 1.6.10. Algebra and Arithmetic
- 1.7. Mathematics in Asia, the Middle Ages and the Renaissance
  - 1.7.1. Chinese Mathematics
  - 1.7.2. Mathematics in India
  - 1.7.3. The Arab Influence
  - 1.7.4. Romans
  - 1.7.5. The European Middle Ages
  - 1.7.6. Medieval Mathematics
  - 1.7.7. The Mathematics of the Renaissance
  - 1.7.8. Perspective
  - 1.7.9. Maps
  - 1.7.10. Astronomy and Mathematics
  - 1.7.11. Trigonometry
  - 1.7.12. Arithmetic and Algebra
  - 1.7.13. Logarithms
  - 1.7.14. A New Relationship
- 1.8. The Scientific Method and the New Geometry
  - 1.8.1. Bacon
  - 1.8.2. Descartes
  - 1.8.3. Galileo
  - 1.8.4. Universities and Scientific Societies
  - 1.8.5. Projective Geometry
  - 1.8.6. Coordinate Geometry
  - 1.8.7. Algebra and Geometry
- 1.9. Infinitesimal Calculus and Euler Geometry
  - 1.9.1. Towards Calculus
  - 1.9.2. Newton and Leibniz
  - 1.9.3. Mathematics in the 18th Century
  - 1.9.4. The Bernouilli
  - 1.9.5. Euler
- 1.10. Gamification of Mathematics

05

# Methodology

This training program offers a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*



## At TECH Education School we use the Case Method

In a given situation, what should a professional do? Throughout the program students will be presented with multiple simulated cases based on real situations, where they will have to investigate, establish hypotheses and, finally, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method.

*With TECH, educators can experience a learning methodology that is shaking the foundations of traditional universities around the world.*



*It is a technique that develops critical skills and prepares educators to make decisions, defend their arguments, and contrast opinions.*

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*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Educators who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process is solidly focused on practical skills that allow educators to better integrate the knowledge into daily practice.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life teaching.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.





## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

Our University is the first in the world to combine case studies with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.



*Educators will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we have trained more than 85,000 educators with unprecedented success in all specialties. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by our learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



#### Study Material

All teaching material is produced by the specialist educators who teach the course, specifically for the course, so that the teaching content is really specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### Educational Techniques and Procedures on Video

TECH introduces students to the latest techniques, with the latest educational advances, and to the forefront of Education. All this, first-hand, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive multimedia content presentation training Exclusive system was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises: so that they can see how they are achieving your goals.



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.





06

# Certificate

The Postgraduate Certificate in Disciplinary Training in Mathematics guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.





The image features two black graduation caps (mortarboards) against a blue sky with light clouds. The caps are positioned diagonally, with one in the foreground and another slightly behind it. The background is split into a white lower half and a red upper half by a diagonal line.

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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*

This **Postgraduate Certificate in Disciplinary Training in Mathematics** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meet the requirements commonly demanded by labor exchanges, competitive examinations and professional career evaluation committees.

Title: **Postgraduate Certificate in Disciplinary Training in Mathematics**

Official N° of Hours: **150 h.**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment



## Postgraduate Certificate

### Disciplinary Training in Mathematics

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

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